

New and Otherwise Interesting Species of Mollusks from Guaymas, Sonora, Mexico

BY

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(Plates 21 and 22; 1 Text figure; 1 Map)

WITH MILES OF ROCKY COASTLINE, generally free from the heavy wave action and surge of the Pacific Coast, Guaymas is an ideal locality for the skindiving collector. Annually, for the past three years, each of us has averaged three or four diving trips to this port; however our diving and collecting commenced there in 1956.

During the winter months the water temperature at Guaymas dips below 18° C and comparatively few rock dwelling species are found offshore. As the water begins to warm in the spring, dense growths of algae rapidly appear. These algae attach to the rocks in such quantity that the bottom is virtually obliterated from view. Strands of one species extend eight to ten meters above their holdfasts.

In late May and early June the water rapidly warms, killing the algae, so that by the latter part of June large quantities of seaweed have washed ashore, leaving the bottom easy to explore. From mid July to early October the surface temperature hovers around 30° C. During this period many species are spawning, making collection and selection of specimens much easier.

The following list of shells represents species that we have taken at Guaymas both by "free diving" and with the use of SCUBA.¹ This is by no means complete, but represents those species that have not previously been reported from this locality or were recorded from dead material only. Unless otherwise specified, the collecting locality is just northwest of a small cove known locally as Bahía Saladita and designated as "(1) Cove" on the map showing the Guaymas collecting localities. Another col-

lecting area which apparently lacks a name is the small rocky reef just north of the entrance of Bacochibampo Bay, identified by the number (2). The other two localities mentioned are north of San Carlos Bay, "(3) Cove" and Ensenada Lalo.

LIST OF SPECIES

Cymatinoa electilis (BERRY, 1963). Pl. 21; figs. 7, 8; text fig. 1. Recently described from Manzanillo, Colima, Mexico. Specimens were found buried in muddy sand under rocks 10 m below the surface. (DRS)

In the past few months this species has been the center of considerable discussion. It was originally described by BERRY (1963) as *Crenimargo electilis* gen. nov. et spec. nov. Since its publication it has been suggested that the genus would have to stand as a *nomen nudum* as no type species was designated in the original description. As Dr. Myra Keen pointed out (personal communication; 7 May 1964) the International Code of Zoological Nomenclature provides four ways by which a type can be fixed in the original publication [Article 68] to be applied in the order of precedence. First is original designation, second is use of *typicus*, third is monotypy, fourth is tautonymy.

The Code recognizes monotypy as a valid means of fixation and Dr. Berry fulfilled the requirements under monotypy, for there is a single nominal species, and there is also an adequate "indication" for the genus in the form of a differential diagnosis.

The question of validity of *Crenimargo* became unimportant when it was learned that the name was preoccupied necessitating a new name. Dr. Berry has recently

¹ Self-Contained Underwater Breathing Apparatus

(29 July 1964) provided us with the new generic name and fixed the type species as follows:

Genus *Cymatinoa* BERRY, 1964; *nom. nov.* for *Crenimargo* BERRY, 1963, [Leaflets in Malacology, 1(23):140], *nomen praeoc.*

Type species: *C. electilis* BERRY, 1963.

Vanikoro aperta (CARPENTER, 1864). Pl. 21; figs. 9-11. Living in colonies under rocks in depths of 2 to 10 m. The largest specimen measures 10.6 x 11.4 mm.

Dr. Myra Keen (personal communication, 7 May 1964) requested us to point out that the illustration she used for *V. aperta* [KEEN, 1958; p. 311, fig. 230] had been incorrectly labelled and that at the time she had no way of verifying the identification. Since the figure of the holotype USNM No. 15897 in PALMER [1963, pl. 66, fig. 1] is poor, two additional views of the distinctive early sculpture are shown here.



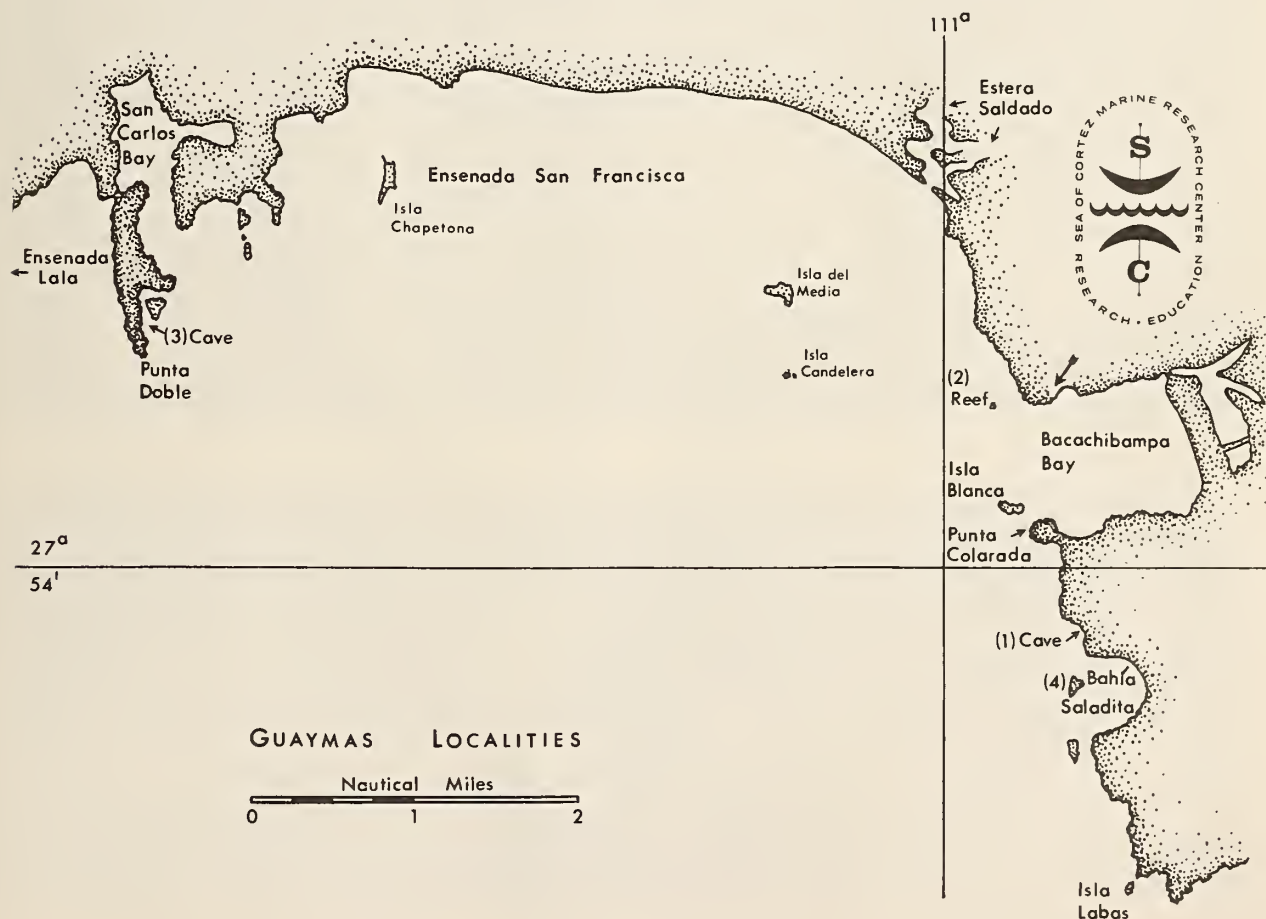
Text figure 1: *Cymatinoa electilis* (BERRY, 1963); internal hinge area of left valve showing ligament and cardinal teeth (x 8)

Cheilea corrugata (BRODERIP, 1834).

This, like the preceding species, lives in colonies. Taken under rocks 8 to 10 m below the surface. (DRS)

Polinices caprae (PHILIPPI, 1852).

One dead specimen from a sandy bottom near rocky rubble at 10 m. (DRS)



Bursa caelata (BRODERIP, 1833).

Fairly common at Panama and occasionally taken at Mazatlán; one living specimen at a depth of 12 m. (DRS)

Pterynotus pinniger (BRODERIP, 1833).

One of us (SHASKY, 1960) has previously reported taking live specimens of this beautiful species at Guaymas (while trawling over a mud bottom). The specimens reported here were exposed on the sides of rocks at 10 m. We consider *P. pinniger* to be synonymous with *P. inezana* DURHAM, 1950. (See EMERSON, 1960, for a further discussion of this complex). (DRS, GBC)

Ocenebra carmen (LOWE, 1935). Plate 21; fig. 6.

Unreported since the original description, although a few specimens were trawled in the Loreto Channel off Carmen Island, Gulf of California on the Ariel Expedition (GBC). Several specimens taken from under rocks at a depth of 8 to 10 m. (DRS, GBC)

Phyllocoma scalariformis BRODERIP, 1833.

Two living specimens collected from under partially buried rocks at a depth of 10 m. (DRS, GBC)

Typhis (Typhisopsis) coronatus BRODERIP, 1833. Pl. 21; figs. 2, 3.

This species is rarely taken by the shore collector or diver, but it is rather common offshore. When a locality is dredged where it is known to occur, as many as ten specimens may be brought up in one haul of the dredge. For discussion of this species and synonymy see KEEN & CAMPBELL, 1964. One dead specimen (21.8 x 12.8 mm) was obtained from the 15 m depth. (GBC)

Typhis (Typhisopsis) grandis A. ADAMS, 1855. Pl. 21; fig. 1.

Two large dead specimens of this species (38.8 x 23.0 mm & 25.4 x 18.2 mm) were found at the edge of the sandy area at approximately 15 m. The systematic position of this species will be clarified in another study currently in progress; therefore, it will not be discussed here except to say that *T. grandis* A. ADAMS is not a synonym for *T. coronatus* BRODERIP based on the type material in the British Museum (Natural History). Another specimen was collected in 3 m from the cove between Hotel Playa de Cortez and Punta Colorada. (DRS, GBC)

Pterotyphis (Tripterotyphis) lowei (PILSBRY, 1931). Pl. 21; figs. 4, 5.

One small specimen taken under a rock at a depth of 2 m in cove (3). This is the first living specimen recorded from the Gulf of California. (DRS)

Anachis incerta (STEARNS, 1892).

This varicolored species is quite common at Guaymas under rocks in depths of 2 to 12 m. (DRS, GBC)

Bailya anomala (HINDS, 1844).

One living specimen from under a rock resting on a gravel bottom. This extends the range about 1750 miles northwestward. (DRS)

Cantharus bilirata (REEVE, 1846).

Recently reported (SHASKY, 1961) in the Gulf of California from two dead specimens, we have found numerous specimens of this interesting species under rocks in 8 to 18 m. (DRS, GBC)

Mitra (Scabricula) lignaria REEVE, 1844. Pl. 22; fig. 12. Although unreported in recent years, we have found one dead and two living specimens. Under rocks buried in mud at a depth of 10 m. Largest specimen measures 56 mm in height. (DRS, GBC)

Mitra (Strigatella) crenata BRODERIP, 1836. Pl. 22; fig. 15. We have found numerous specimens of a small mitre, none measuring over 10 mm, that seem to belong to this species. Under rocks at depths of 2 to 15 m. (DRS, GBC)
Conus (Conus) tiaratus SOWERBY, 1833. Pl. 22; fig. 17. Three specimens (two of which were living) of this species have been collected from the surface of large rocks at a depth of 5 m. This, we believe, represents the first account of this species from the Gulf of California. (GBC)

Conus (Chelyconus) orion BRODERIP, 1833. Pl. 22; figs. 18, 22.

Previously unreported from inside the Gulf of California. Two fresh dead specimens taken from the sandy floor around rocky reefs at 10 to 12 m. In the past some authors have considered *C. orion* a synonym of *C. vittatus* BRUGUIÈRE, 1792 (Pl. 22, figs. 19, 23). For comparison, both species are illustrated with close-ups of the periostracum; it will be noted that the periostracum of *C. orion* has spiral tufting which is absent in *C. vittatus*. (DRS, GBC)
Conus (Cylindrus) dalli STEARNS, 1873.

No living specimens have been reported from inside the Gulf of California, although OLDROYD (1918), EMERSON (1962) and HANNA (1963) have mentioned beach mate-

Explanation of Plate 21

- Figure 1: *Typhis (Typhisopsis) grandis* A. ADAMS, 1855 (x 1.33) Figure 2: *Typhis (Typhisopsis) coronatus* BRODERIP, 1833. (x 2.2) Figure 3: *Typhis (Typhisopsis) coronatus* BRODERIP (juvenile). (x 3.5)
Figure 4: *Pterotyphis (Tripterotyphis) lowei* (PILSBRY, 1931) (x 7.3) Figure 5: *Pterotyphis (Tripterotyphis) lowei* (PILSBRY, 1931) (x 7.3) dorsal view. Figure 6: *Ocenebra carmen* (LOWE, 1935) (x 7.7)
Figure 7: *Cymatiosa electilis* (BERRY, 1963), exterior of left valve (x 2.5) Figure 8: same as no 7: interior of left valve. (x 2.5) Figure 9: *Vanikoro aperta* (CARPENTER, 1864) neanic whorls, lateral view. (x 10)
Figure 10: same as no. 9 ventral view. (x 3) Figure 11: same as no. 9 apical view. (x 11)



Figure 1

Figure 2

Figure 3

Figure 4



Figure 5

Figure 6

Figure 7

Figure 8



Figure 9

Figure 10

Figure 11

rial. Two living specimens from Ensenada Lalo in mud under rocks at 15 m. (DRS)

DESCRIPTION OF NEW SPECIES

TROCHIDAE

Calliostomatinae

Calliostoma SWAINSON, 1840

Calliostoma mcleani SHASKY & CAMPBELL, spec. nov.

(Plate 22; figs. 21, 24.)

1961. *Calliostoma angelenum* LOWE, McLEAN, JAMES H. Trans. San Diego Soc. Nat. Hist., 12 (28): 463. [not *Calliostoma angelenum* LOWE, 1935]

Shell conical, thin; whorls eight; protoconch smooth, white, and polished, approximately one whorl; early whorls dark brown lightening to orange-brown on the body whorl with irregularly spaced oblique stripes of darker brown with an occasional lighter area between; the peripheral three to four beaded lines are checked with white; early whorls sculptured by six beaded spiral threads, the fifth most prominent; on later whorls smaller beaded threads appear bringing the number to twelve on the body whorl; whorls generally flattened giving the shell rather straight sides and diverging at an angle of 70°; base flat with an angular periphery and nine to ten strong beaded cords between which are weak spiral threads; aperture oval; imperforate; columella smooth, straight, and white; outer lip thin, iridescent within; operculum round, thin and transparent horn color, margin entire, nucleus central with several subsequent whorls completing it.

Animal solid bright reddish orange; eye spots black at the base of long tentacles; there are eight long epipodial

tentacles which lie posterior to the right and left neck lobes and ventral to the operculigerous disc; the foot is a similar color with numerous small short lines of darker red running parallel to the long axis of the sole of the foot.

Besides the holotype, 87 paratypes and 8 hypotypes were studied. Except for size there was negligible variation in color and sculpture among those specimens collected at Guaymas. Specimens collected in the early spring averaged about one-half the size of those collected during the summer and fall. The hypotypes from the east coast of Baja California were brighter red and smaller in size. The hypotype from Chamela Bay (10.4 x 8.2 mm) has a narrower apical angle and more impressed sutural grooves, but the sculpture is the same as the Guaymas specimens.

Dimensions: Holotype 11.5 mm; maximum diameter 10.0 mm.

Holotype: Stanford University Paleontological Type Collection no. 9742.

Paratypes: Since this species has been taken in rather large numbers, paratypes will be deposited in a number of the larger institutions.

Type Locality: First shallow cove northwest of Bahía Saladita (no. 1 on map) which is approximately midway between Punta Colorada and Punta Lobos, Guaymas, Sonora, Mexico (Lat. 27° 53' 15" N.; Long. 110° 59' W.) in depths of 2 to 15 m.

Range: The northern limit of the range appears to be Bahía de Los Angeles on the eastern coast of Baja California, and the southern limit Chamela Bay, Jalisco, Mexico (see Table 1).

Habitat: This colorful and unique *Calliostoma* has an ecological niche and bathymetric range that protects it from all but the aggressive collector. Populations are most plentiful under medium size rocks (10 to 100 kg) at an

Table 1

Specimen	Collection	Locality	Depth	Collector
Holotype	SUPTC no. 9742	Cove number (1) on map, Guaymas	2-15 m	Donald Shasky
Paratype 1	James McLean coll.	Cove number (1) on map, Guaymas	2-15 m	Donald Shasky
Paratypes 2-44	D. Shasky coll.	Cove number (1) on map, Guaymas	2-15 m	Donald Shasky
Paratypes 45-71	B. Campbell coll.	Cove number (1) on map, Guaymas	2-15 m	Bruce Campbell
Paratypes 72-82	D. Shasky coll.	Island number (4) on map, Guaymas	10 m	Donald Shasky
Paratypes 83-84	B. Campbell coll.	Isla Blanca, Guaymas	14 m	Bruce Campbell
Paratype 85	T. Bratcher coll.	Punta Colorada, Guaymas	ca. 3 m	Twila Bratcher
Paratypes 86-87	D. Shasky coll.	Reef number (2) on map, Guaymas	4 m	Donald Shasky
Hypotype 1	B. Campbell coll.	Cove number (3) on map, Guaymas	3 m	Bruce Campbell
Hypotypes 2-3	B. Campbell coll.	Monserate Is., Gulf of California	90 m	Ariel Expedition
Hypotype 4	B. Campbell coll.	Loreto Channel, Gulf of California	50 m	Ariel Expedition
Hypotypes 5-7	James McLean coll.	Bahía de Los Angeles, Baja Calif.	"diving"	James McLean
Hypotype 8	Los Angeles County Museum coll.	Chamela Bay, Jalisco, Mexico	30-80 m	George Willett

average depth of 10 m. An occasional specimen, usually dead, is found on a flat rockless area favorable for dredging; likewise a few shells have been taken by "free diving" (without aid of SCUBA or "hookah") in as shallow water as 2 m.

Six specimens have been observed by one of us (GBC) over a period of months in a marine aquarium (capacity 210 liters). The animals are not at all sluggish and move readily about the aquarium usually on the sides, where they can be seen feeding on an alga or diatom growing on the glass, or crawling on the sides of rocks on the sand substrate. Activity is primarily nocturnal.

Remarks: Of the ten or so species of *Calliostoma* occurring in the Panamic province, only two need special comparison; one is *C. angelenum* LOWE, 1935 and the other is *C. leanum* (C. B. ADAMS, 1852). We studied the holotype of *C. angelenum* which is deposited in the San Diego Society of Natural History Type collection, and found it a much different shell, larger in size with the general form of *C. marshalli* LOWE, 1935. Although the holotype of *C. angelenum* is the only specimen known, several characters differentiate it from *C. marshalli* and seem to sufficiently justify retaining *C. angelenum* as a valid species. The type locality for *C. angelenum* is Bahía de Los Angeles, which perhaps explains why James McLean assigned his three specimens of *C. mcleani* to that species. Through the courtesy of Dr. William Clench one of us (GBC) was able to study the lectotype of *C. leanum* (C. B. ADAMS) (MCZ no. 186336); again this is a larger species with impressed sutures, shouldered whorls, and fewer spiral cords with coarser sculpture.

Perhaps a reason why this species has remained undiscovered is its peculiar and rather inaccessible habitat.

We take pleasure in naming this species in honor of our good friend Mr. James McLean who was the first to put this species on record.

MITRIDAE

Mitra RÖDING, 1798

(*Strigatella* SWAINSON, 1840)

Mitra (Strigatella) sphoni SHASKY & CAMPBELL,
spec. nov.

(Plate 22, figs. 13, 14)

Shell moderate size, fusiform, light tan in color under a dark brown periostracum; protoconch rather worn followed by seven subsequent whorls; sculpture of increasingly coarse spiral cords which initially number four and are wider than the interspaces and on body whorl become rather wide V-shaped ridges totalling twelve; axial sculpture wanting except for periodic growth lines; body whorl convex, gradually tapering at base; sutural groove shallow; whorls lacking shoulder; columella with four distinct folds with a fifth, less apparent, anteriorly; outer lip smooth within; aperture sinuous, elongate and narrow; anterior canal broad, open, slightly recurved; siphonal fasciole well developed, concave.

Two paratypes although smaller have the same general form of the holotype. The smallest paratype (Plate 22; fig. 14) retains the more obese form of a subadult shell.

Dimensions: Holotype height 23.3 mm; maximum diameter 8.0 mm.

Holotype: Stanford University Paleontological Type Collection no. 9743.

Paratypes: Two paratypes are in the B. Campbell collection and one in the D. Shasky collection.

Type Locality: First shallow cove northwest of Bahía Saladita (no. 1 on map) which is approximately midway between Punta Colorada and Punta Lobos, Guaymas, Sonora, Mexico (Lat. 27° 53' 15" N.; Long. 110° 59' W.) in depths of 2 to 15 m.

Remarks: Of all the Panamic miters, only one is sufficiently similar to *Mitra sphoni* to warrant special comparison, i.e. *M. crenata* BRODERIP, 1836. This species was described from Ecuador and the length is given by KEEN (1958) as about 17 mm. KEEN also copied the original figure in REEVE (Conch. Icon.) and mentioned that specimens from Guaymas, Mexico in the collection of Dr. S. S. Berry may represent that species. We have a large number of specimens collected at Guaymas of a miter, one of which is figured here, Plate 22; fig. 15, which we

Explanation of Plate 22

- Figure 12. *Mitra (Scabricula) lignaria* REEVE, 1844. (x 0.9) Figure 13. *Mitra (Strigatella) sphoni* SHASKY & CAMPBELL, spec. nov., holotype SUPTC no. 9743. (x 2.2) Figure 14. same name as no. 13. paratype. (x 4)
Figure 15. *Mitra (? Strigatella) crenata* BRODERIP, 1836. (x 5.7) Figure 16. *Crassispira (Striospira) cortezi* SHASKY & CAMPBELL, spec. nov., holotype SUPTC no. 9744. (x 2.2) Figure 17. *Conus (Conus) tiaratus* SOWERBY, 1833. (x 1.8) Figure 18. *Conus (Chelyconus) orion* BRODERIP, 1833 (x 1.5) Figure 19. *Conus (Chelyconus) vittatus* BRUGUIÈRE, 1792. (x 1.33) Figure 20. *Clathurella (Lioglyphostoma) crebriforma* SHASKY & CAMPBELL, spec. nov., holotype SUPTC no. 9745. (x 6.66) Figure 21. *Calliostoma mcleani* SHASKY & CAMPBELL, spec. nov., holotype SUPTC no. 9742 (x 3) Figure 22. Periostracum of *C. orion*. (x 5) Figure 23. Periostracum of *C. vittatus*. (x 5) Figure 24. same data as no. 21 basal view of holotype. (x 3)